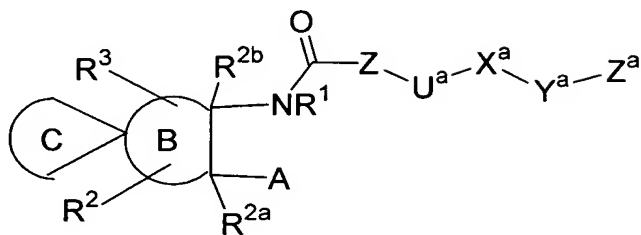


WHAT IS CLAIMED IS:

1. A compound of formula I:



I

5 or a stereoisomer or pharmaceutically acceptable salt form thereof, wherein;

A is selected from  $-\text{COR}^5$ ,  $-\text{CO}_2\text{H}$ ,  $\text{CH}_2\text{CO}_2\text{H}$ ,  $-\text{CO}_2\text{R}^6$ ,  $-\text{CONHOH}$ ,  
 $-\text{CONHOR}^5$ ,  $-\text{CONHOR}^6$ ,  $-\text{N}(\text{OH})\text{COR}^5$ ,  $-\text{N}(\text{OH})\text{CHO}$ ,  $-\text{SH}$ ,  
 10  $-\text{CH}_2\text{SH}$ ,  $-\text{S}(\text{O})(=\text{NH})\text{R}^a$ ,  $-\text{SN}_2\text{H}_2\text{R}^a$ ,  $-\text{PO}(\text{OH})_2$ , and  
 $-\text{PO}(\text{OH})\text{NHR}^a$ ;

ring B is a 3-13 membered non-aromatic carbocycle or  
 heterocycle comprising: carbon atoms, 0-3 carbonyl  
 15 groups, 0-4 double bonds, and from 0-2 ring  
 heteroatoms selected from O, N,  $\text{NR}^2$ , and  $\text{S}(\text{O})_p$ ,  
 provided that ring B contains other than a S-S, O-O,  
 or S-O bond;

20 ring C forms a spiro ring on Ring B and is a 3-13  
 membered carbocycle or heterocycle comprising:  
 carbon atoms, 0-3 carbonyl groups, 0-4 double bonds,  
 and from 0-5 ring heteroatoms selected from O, N,  
 $\text{NR}^2$ , and  $\text{S}(\text{O})_p$  and substituted with 0-6  $\text{R}^e$ , provided  
 25 that ring C contains other than a S-S, O-O, or S-O  
 bond;

Z is absent or selected from a  $\text{C}_{3-13}$  carbocycle  
 substituted with 0-5  $\text{R}^b$  and a 5-14 membered  
 30 heterocycle comprising: carbon atoms and 1-4

heteroatoms selected from the group consisting of N, O, and S(O)<sub>p</sub> and substituted with 0-5 R<sup>b</sup>;

U<sup>a</sup> is absent or is selected from: O, NR<sup>a1</sup>, C(O), C(O)O,  
 5 OC(O), C(O)NR<sup>a1</sup>, NR<sup>a1</sup>C(O), OC(O)O, OC(O)NR<sup>a1</sup>,  
 NR<sup>a1</sup>C(O)O, NR<sup>a1</sup>C(O)NR<sup>a1</sup>, S(O)<sub>p</sub>, S(O)<sub>p</sub>NR<sup>a1</sup>, NR<sup>a1</sup>S(O)<sub>p</sub>,  
 and NR<sup>a1</sup>SO<sub>2</sub>NR<sup>a1</sup>;

X<sup>a</sup> is absent or selected from C<sub>1-10</sub> alkylene, C<sub>2-10</sub>  
 10 alkenylene, and C<sub>2-10</sub> alkynylene;

Y<sup>a</sup> is absent or selected from O, NR<sup>a1</sup>, S(O)<sub>p</sub>, and C(O);

Z<sup>a</sup> is selected from H, a C<sub>3-13</sub> carbocycle substituted with  
 15 0-5 R<sup>c</sup> and a 5-14 membered heterocycle comprising:  
 carbon atoms and 1-4 heteroatoms selected from the  
 group consisting of N, O, and S(O)<sub>p</sub> and substituted  
 with 0-5 R<sup>c</sup>;

20 provided that Z, U<sup>a</sup>, Y<sup>a</sup>, and Z<sup>a</sup> do not combine to form a  
 N-N, N-O, O-N, O-O, S(O)<sub>p</sub>-O, O-S(O)<sub>p</sub> or S(O)<sub>p</sub>-S(O)<sub>p</sub>  
 group;

R<sup>1</sup> is selected from H, C<sub>1-4</sub> alkyl, phenyl, and benzyl;  
 25

R<sup>2</sup> is selected from Q, Cl, F, (C<sub>1-10</sub> alkylene substituted  
 with 0-3 R<sup>b1</sup>)-Q, (C<sub>2-10</sub> alkenylene substituted with  
 0-3 R<sup>b1</sup>)-Q, (C<sub>2-10</sub> alkynylene substituted with 0-3  
 R<sup>b1</sup>)-Q, (CR<sup>a</sup>RA<sup>1</sup>)<sub>r1</sub>O(CR<sup>a</sup>RA<sup>1</sup>)<sub>r</sub>-Q,  
 30 (CR<sup>a</sup>RA<sup>1</sup>)<sub>r1</sub>NR<sup>a</sup>(CR<sup>a</sup>RA<sup>1</sup>)<sub>r</sub>-Q, (CR<sup>a</sup>RA<sup>1</sup>)<sub>r1</sub>C(O)(CR<sup>a</sup>RA<sup>1</sup>)<sub>r</sub>-Q,  
 (CR<sup>a</sup>RA<sup>1</sup>)<sub>r1</sub>C(O)O(CR<sup>a</sup>RA<sup>1</sup>)<sub>r</sub>-Q, (CR<sup>a</sup>RA<sup>1</sup>)<sub>r1</sub>C(O)O-C<sub>2-5</sub>  
 alkenylene,

$(\text{CR}^a\text{Ra}^1)_{r1}\text{C}(\text{O})\text{O}-\text{C}_{2-5} \text{ alkynylene},$   
 $(\text{CR}^a\text{Ra}^1)_{r1}\text{OC}(\text{O})(\text{CR}^a\text{Ra}^1)_r-\text{Q}, (\text{CR}^a\text{Ra}^1)_{r1}\text{C}(\text{O})\text{NR}^a\text{Ra}^1,$   
 $(\text{CR}^a\text{Ra}^1)_{r1}\text{C}(\text{O})\text{NR}^a(\text{CR}^a\text{Ra}^1)_r-\text{Q},$   
 $(\text{CR}^a\text{Ra}^1)_{r1}\text{NR}^a\text{C}(\text{O})(\text{CR}^a\text{Ra}^1)_r-\text{Q},$   
5  $(\text{CR}^a\text{Ra}^1)_{r1}\text{OC}(\text{O})\text{O}(\text{CR}^a\text{Ra}^1)_r-\text{Q},$   
 $(\text{CR}^a\text{Ra}^1)_{r1}\text{OC}(\text{O})\text{NR}^a(\text{CR}^a\text{Ra}^1)_r-\text{Q},$   
 $(\text{CR}^a\text{Ra}^1)_{r1}\text{NR}^a\text{C}(\text{O})\text{O}(\text{CR}^a\text{Ra}^1)_r-\text{Q},$   
 $(\text{CR}^a\text{Ra}^1)_{r1}\text{NR}^a\text{C}(\text{O})\text{NR}^a(\text{CR}^a\text{Ra}^1)_r-\text{Q},$   
 $(\text{CR}^a\text{Ra}^1)_{r1}\text{S}(\text{O})_p(\text{CR}^a\text{Ra}^1)_r-\text{Q}, (\text{CR}^a\text{Ra}^1)_{r1}\text{SO}_2\text{NR}^a(\text{CR}^a\text{Ra}^1)_r-\text{Q},$   
10  $(\text{CR}^a\text{Ra}^1)_{r1}\text{NR}^a\text{SO}_2(\text{CR}^a\text{Ra}^1)_r-\text{Q},$  and  
 $(\text{CR}^a\text{Ra}^1)_{r1}\text{NR}^a\text{SO}_2\text{NR}^a(\text{CR}^a\text{Ra}^1)_r-\text{Q};$

$\text{R}^{2a}$  is selected from H,  $\text{C}_{1-6}$  alkyl,  $\text{OR}^a$ ,  $\text{NR}^a\text{Ra}^1$ , and  
 $\text{S}(\text{O})_p\text{R}^a;$

15

$\text{R}^{2b}$  is H or  $\text{C}_{1-6}$  alkyl;

$\text{Q}$  is selected from H, a  $\text{C}_{3-13}$  carbocycle substituted with  
0-5  $\text{R}^d$  and a 5-14 membered heterocycle comprising:  
20 carbon atoms and 1-4 heteroatoms selected from the  
group consisting of N, O, and  $\text{S}(\text{O})_p$  and substituted  
with 0-5  $\text{R}^d$ ;

$\text{R}^3$  is selected from  $\text{Q}^1$ , Cl, F,  $\text{C}_{1-6}$  alkylene- $\text{Q}^1$ ,  $\text{C}_{2-6}$   
25 alkenylene- $\text{Q}^1$ ,  $\text{C}_{2-6}$  alkynylene- $\text{Q}^1$ ,  
 $(\text{CR}^a\text{Ra}^1)_{r1}\text{O}(\text{CR}^a\text{Ra}^1)_r-\text{Q}^1$ ,  $(\text{CR}^a\text{Ra}^1)_{r1}\text{NR}^a(\text{CR}^a\text{Ra}^1)_r-\text{Q}^1$ ,  
 $(\text{CR}^a\text{Ra}^1)_{r1}\text{NR}^a\text{C}(\text{O})(\text{CR}^a\text{Ra}^1)_r-\text{Q}^1$ ,  
 $(\text{CR}^a\text{Ra}^1)_{r1}\text{C}(\text{O})\text{NR}^a(\text{CR}^a\text{Ra}^1)_r-\text{Q}^1$ ,  
 $(\text{CR}^a\text{Ra}^1)_{r1}\text{C}(\text{O})(\text{CR}^a\text{Ra}^1)_r-\text{Q}^1$ ,  $(\text{CR}^a\text{Ra}^1)_{r1}\text{C}(\text{O})\text{O}(\text{CR}^a\text{Ra}^1)_r-\text{Q}^1$ ,  
30  $(\text{CR}^a\text{Ra}^1)_2)_{r1}\text{S}(\text{O})_p(\text{CR}^a\text{Ra}^1)_r-\text{Q}^1$ , and  
 $(\text{CR}^a\text{Ra}^1)_{r1}\text{SO}_2\text{NR}^a(\text{CR}^a\text{Ra}^1)_r-\text{Q}^1;$

Q<sup>1</sup> is selected from H, phenyl substituted with 0-3 R<sup>d</sup>,  
 naphthyl substituted with 0-3 R<sup>d</sup> and a 5-10 membered  
 heteroaryl comprising: carbon atoms and 1-4  
 5 heteroatoms selected from the group consisting of N,  
 O, and S(O)<sub>p</sub> and substituted with 0-3 R<sup>d</sup>;

R<sup>a</sup>, at each occurrence, is independently selected from H,  
 C<sub>1-4</sub> alkyl, phenyl and benzyl;

10 R<sup>a1</sup>, at each occurrence, is independently selected from H  
 and C<sub>1-4</sub> alkyl;

alternatively, R<sup>a</sup> and R<sup>a1</sup> when attached to a nitrogen are  
 15 taken together with the nitrogen to which they are  
 attached to form a 5 or 6 membered ring comprising  
 carbon atoms and from 0-1 additional heteroatoms  
 selected from the group consisting of N, O, and  
 S(O)<sub>p</sub>;

20 R<sup>a2</sup>, at each occurrence, is independently selected from  
 C<sub>1-4</sub> alkyl, phenyl and benzyl;

R<sup>b</sup>, at each occurrence, is independently selected from  
 25 C<sub>1-6</sub> alkyl, OR<sup>a</sup>, Cl, F, Br, I, =O, -CN, NO<sub>2</sub>, NR<sup>a</sup>R<sup>a1</sup>,  
 C(O)R<sup>a</sup>, C(O)OR<sup>a</sup>, C(O)NR<sup>a</sup>R<sup>a1</sup>, R<sup>a</sup>NC(O)NR<sup>a</sup>R<sup>a1</sup>,  
 OC(O)NR<sup>a</sup>R<sup>a1</sup>, R<sup>a</sup>NC(O)OR<sup>a</sup>, S(O)<sub>2</sub>NR<sup>a</sup>R<sup>a1</sup>, NR<sup>a</sup>S(O)<sub>2</sub>R<sup>a2</sup>,  
 NR<sup>a</sup>S(O)<sub>2</sub>NR<sup>a</sup>R<sup>a1</sup>, OS(O)<sub>2</sub>NR<sup>a</sup>R<sup>a1</sup>, NR<sup>a</sup>S(O)<sub>2</sub>R<sup>a2</sup>, S(O)<sub>p</sub>R<sup>a2</sup>,  
 CF<sub>3</sub>, and CF<sub>2</sub>CF<sub>3</sub>;

30 R<sup>b1</sup>, at each occurrence, is independently selected from  
 OR<sup>a</sup>, Cl, F, Br, I, =O, -CN, NO<sub>2</sub>, and NR<sup>a</sup>R<sup>a1</sup>;

$R^c$ , at each occurrence, is independently selected from  
 $C_{1-6}$  alkyl,  $OR^a$ , Cl, F, Br, I, =O, -CN,  $NO_2$ ,  $NR^aRa^1$ ,  
 $C(O)R^a$ ,  $C(O)OR^a$ ,  $C(O)NR^aRa^1$ ,  $R^aNC(O)NR^aRa^1$ ,  
 $OC(O)NR^aRa^1$ ,  $R^aNC(O)OR^a$ ,  $S(O)_2NR^aRa^1$ ,  $NR^aS(O)_2Ra^2$ ,  
5  $NR^aS(O)_2NR^aRa^1$ ,  $OS(O)_2NR^aRa^1$ ,  $NR^aS(O)_2Ra^2$ ,  $S(O)_pRa^2$ ,  
 $CF_3$ ,  $CF_2CF_3$ ,  $CH_2F$ ,  $CHF_2$ ,  $CF_2CH_3$ ,  $C(CH_3)_2F$ ,  $OCF_3$ ,  $C_{3-10}$   
carbocycle substituted with 0-3  $R^{c1}$  and a 5-14  
membered heterocycle comprising: carbon atoms and  
1-4 heteroatoms selected from the group consisting  
10 of N, O, and  $S(O)_p$  and substituted with 0-3  $R^{c1}$ ;

alternatively, when two  $R^c$  groups are attached to the  
same carbon atom, they form a spiro ring D that is a  
3-11 membered carbocycle substituted with 0-2  $R^{c1}$  or  
15 a 3-13 membered heterocycle comprising: carbon  
atoms and from 1-4 ring heteroatoms selected from O,  
N, and  $S(O)_p$  and substituted with 0-2  $R^{c1}$ , provided  
that ring D contains other than a S-S, O-O, or S-O  
bond;

20 alternatively, when two  $R^c$  groups are attached to adjacent  
carbon atoms, together with the carbon atoms to  
which they are attached they form a 5-7 membered  
saturated, partially saturated or unsaturated ring  
25 consisting of: carbon atoms and 0-2 heteroatoms  
selected from the group consisting of N, O, and  
 $S(O)_p$ ; this ring is substituted with 0-2  $R^{c1}$ ;

$R^{c1}$ , at each occurrence, is independently selected from  
30  $C_{1-6}$  alkyl,  $OR^a$ , Cl, F, Br, I, =O, -CN,  $NO_2$ ,  $NR^aRa^1$ ,  
 $C(O)R^a$ ,  $C(O)OR^a$ ,  $C(O)NR^aRa^1$ ,  $R^aNC(O)NR^aRa^1$ ,  
 $OC(O)NR^aRa^1$ ,  $R^aNC(O)OR^a$ ,  $S(O)_2NR^aRa^1$ ,  $NR^aS(O)_2Ra^2$ ,

$\text{NR}^{\text{a}}\text{S}(\text{O})_2\text{NR}^{\text{a}}\text{Ra}^1$ ,  $\text{OS}(\text{O})_2\text{NR}^{\text{a}}\text{Ra}^1$ ,  $\text{NR}^{\text{a}}\text{S}(\text{O})_2\text{Ra}^2$ ,  $\text{S}(\text{O})_{\text{p}}\text{Ra}^2$ ,  
 $\text{CF}_3$ ,  $\text{CF}_2\text{CF}_3$ ,  $\text{CH}_2\text{F}$ , and  $\text{CHF}_2$ ;

$\text{R}^{\text{d}}$ , at each occurrence, is independently selected from  
 5  $\text{C}_{1-6}$  alkyl,  $\text{OR}^{\text{a}}$ ,  $\text{Cl}$ ,  $\text{F}$ ,  $\text{Br}$ ,  $\text{I}$ ,  $=\text{O}$ ,  $-\text{CN}$ ,  $\text{NO}_2$ ,  $\text{NR}^{\text{a}}\text{Ra}^1$ ,  
 $\text{C}(\text{O})\text{Ra}^1$ ,  $\text{C}(\text{O})\text{OR}^{\text{a}}$ ,  $\text{C}(\text{O})\text{NR}^{\text{a}}\text{Ra}^1$ ,  $\text{Ra}^1\text{NC}(\text{O})\text{NR}^{\text{a}}\text{Ra}^1$ ,  
 $\text{OC}(\text{O})\text{NR}^{\text{a}}\text{Ra}^1$ ,  $\text{Ra}^1\text{NC}(\text{O})\text{OR}^{\text{a}}$ ,  $\text{S}(\text{O})_2\text{NR}^{\text{a}}\text{Ra}^1$ ,  $\text{NR}^{\text{a}}\text{S}(\text{O})_2\text{Ra}^2$ ,  
 $\text{NR}^{\text{a}}\text{S}(\text{O})_2\text{NR}^{\text{a}}\text{Ra}^1$ ,  $\text{OS}(\text{O})_2\text{NR}^{\text{a}}\text{Ra}^1$ ,  $\text{NR}^{\text{a}}\text{S}(\text{O})_2\text{Ra}^2$ ,  $\text{S}(\text{O})_{\text{p}}\text{Ra}^2$ ,  
 $\text{CF}_3$ ,  $\text{CF}_2\text{CF}_3$ ,  $\text{C}_{3-10}$  carbocycle and a 5-14 membered  
 10 heterocycle comprising: carbon atoms and 1-4  
 heteroatoms selected from the group consisting of  $\text{N}$ ,  
 $\text{O}$ , and  $\text{S}(\text{O})_{\text{p}}$ ;

$\text{R}^{\text{e}}$ , at each occurrence, is independently selected from  
 15  $\text{C}_{1-6}$  alkyl,  $\text{OR}^{\text{a}}$ ,  $\text{Cl}$ ,  $\text{F}$ ,  $\text{Br}$ ,  $\text{I}$ ,  $=\text{O}$ ,  $-\text{CN}$ ,  $\text{NO}_2$ ,  $\text{NR}^{\text{a}}\text{Ra}^1$ ,  
 $\text{C}(\text{O})\text{Ra}^1$ ,  $\text{C}(\text{O})\text{OR}^{\text{a}}$ ,  $\text{C}(\text{O})\text{NR}^{\text{a}}\text{Ra}^1$ ,  $\text{Ra}^1\text{NC}(\text{O})\text{NR}^{\text{a}}\text{Ra}^1$ ,  
 $\text{OC}(\text{O})\text{NR}^{\text{a}}\text{Ra}^1$ ,  $\text{Ra}^1\text{NC}(\text{O})\text{OR}^{\text{a}}$ ,  $\text{S}(\text{O})_2\text{NR}^{\text{a}}\text{Ra}^1$ ,  $\text{NR}^{\text{a}}\text{S}(\text{O})_2\text{Ra}^2$ ,  
 $\text{NR}^{\text{a}}\text{S}(\text{O})_2\text{NR}^{\text{a}}\text{Ra}^1$ ,  $\text{OS}(\text{O})_2\text{NR}^{\text{a}}\text{Ra}^1$ ,  $\text{NR}^{\text{a}}\text{S}(\text{O})_2\text{Ra}^2$ ,  $\text{S}(\text{O})_{\text{p}}\text{Ra}^2$ ,  
 $\text{CF}_3$ ,  $\text{CF}_2\text{CF}_3$ ,  $\text{C}_{3-10}$  carbocycle substituted with 0-2  
 20  $\text{R}^{\text{c}1}$ ,  $(\text{CR}^{\text{a}}\text{Ra}^1)_{\text{r}1-\text{C}_{3-10}}$  carbocycle substituted with 0-2  
 $\text{R}^{\text{c}1}$ , a 5-14 membered heterocycle comprising carbon  
 atoms and 1-4 heteroatoms selected from the group  
 consisting of  $\text{N}$ ,  $\text{O}$ , and  $\text{S}(\text{O})_{\text{p}}$  and substituted with  
 0-2  $\text{R}^{\text{c}1}$ , and  $(\text{CR}^{\text{a}}\text{Ra}^1)_{\text{r}1-5-14}$  membered heterocycle  
 25 comprising carbon atoms and 1-4 heteroatoms selected  
 from the group consisting of  $\text{N}$ ,  $\text{O}$ , and  $\text{S}(\text{O})_{\text{p}}$  and  
 substituted with 0-2  $\text{R}^{\text{c}1}$ ;

$\text{R}^5$ , at each occurrence, is selected from  $\text{C}_{1-10}$  alkyl  
 30 substituted with 0-2  $\text{R}^{\text{b}}$ , and  $\text{C}_{1-8}$  alkyl substituted  
 with 0-2  $\text{R}^{\text{f}}$ ;

R<sup>f</sup>, at each occurrence, is selected from phenyl substituted with 0-2 R<sup>b</sup> and biphenyl substituted with 0-2 R<sup>b</sup>;

5 R<sup>6</sup>, at each occurrence, is selected from phenyl, naphthyl, C<sub>1-10</sub> alkyl-phenyl-C<sub>1-6</sub> alkyl-, C<sub>3-11</sub> cycloalkyl, C<sub>1-6</sub> alkylcarbonyloxy-C<sub>1-3</sub> alkyl-, C<sub>1-6</sub> alkoxy carbonyloxy-C<sub>1-3</sub> alkyl-, C<sub>2-10</sub> alkoxy carbonyl, C<sub>3-6</sub> cycloalkylcarbonyloxy-C<sub>1-3</sub> alkyl-, C<sub>3-6</sub> cycloalkoxy carbonyloxy-C<sub>1-3</sub> alkyl-, C<sub>3-6</sub> cycloalkoxy carbonyl, phenoxy carbonyl, phenyloxy carbonyloxy-C<sub>1-3</sub> alkyl-, phenylcarbonyloxy-C<sub>1-3</sub> alkyl-, C<sub>1-6</sub> alkoxy-C<sub>1-6</sub> alkylcarbonyloxy-C<sub>1-3</sub> alkyl-, [5-(C<sub>1</sub>-C<sub>5</sub> alkyl)-1,3-dioxo-cyclopenten-2-one-yl]methyl, [5-(R<sup>a</sup>)-1,3-dioxo-cyclopenten-2-one-yl]methyl, (5-aryl-1,3-dioxo-cyclopenten-2-one-yl)methyl, -C<sub>1-10</sub> alkyl-NR<sup>7</sup>R<sup>7a</sup>, -CH(R<sup>8</sup>)OC(=O)R<sup>9</sup>, and -CH(R<sup>8</sup>)OC(=O)OR<sup>9</sup>;

20 R<sup>7</sup> is selected from H and C<sub>1-10</sub> alkyl, C<sub>2-6</sub> alkenyl, C<sub>3-6</sub> cycloalkyl-C<sub>1-3</sub> alkyl-, and phenyl-C<sub>1-6</sub> alkyl-;

25 R<sup>7a</sup> is selected from H and C<sub>1-10</sub> alkyl, C<sub>2-6</sub> alkenyl, C<sub>3-6</sub> cycloalkyl-C<sub>1-3</sub> alkyl-, and phenyl-C<sub>1-6</sub> alkyl-;

R<sup>8</sup> is selected from H and C<sub>1-4</sub> linear alkyl;

30 R<sup>9</sup> is selected from H, C<sub>1-8</sub> alkyl substituted with 1-2 R<sup>9</sup>, C<sub>3-8</sub> cycloalkyl substituted with 1-2 R<sup>9</sup>, and phenyl substituted with 0-2 R<sup>b</sup>;

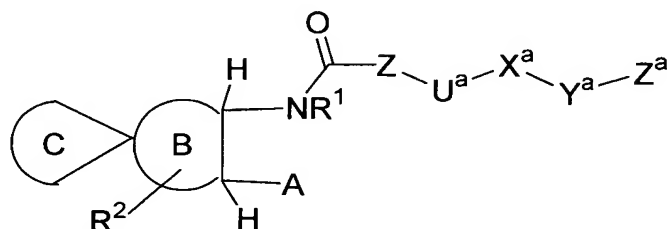
R<sup>g</sup>, at each occurrence, is selected from C<sub>1-4</sub> alkyl, C<sub>3-8</sub> cycloalkyl, C<sub>1-5</sub> alkoxy, and phenyl substituted with 0-2 R<sup>b</sup>;

5 p, at each occurrence, is selected from 0, 1, and 2;

r, at each occurrence, is selected from 0, 1, 2, 3, and 4; and,

10 r<sub>1</sub>, at each occurrence, is selected from 0, 1, 2, 3, and 4.

15 2. A compound according to Claim 1, wherein the compound is of formula II:



II

or a stereoisomer or pharmaceutically acceptable salt  
20 form thereof, wherein;

A is selected from -CO<sub>2</sub>H, CH<sub>2</sub>CO<sub>2</sub>H, -CONHOH, -CONHOR<sup>5</sup>,  
-CONHOR<sup>6</sup>, -N(OH)COR<sup>5</sup>, -N(OH)CHO, -SH, and -CH<sub>2</sub>SH;

25 ring B is a 4-7 membered non-aromatic carbocyclic or heterocyclic ring comprising: carbon atoms, 0-1 carbonyl groups, 0-1 double bonds, and from 0-2 ring heteroatoms selected from O, N, and NR<sup>2</sup>, provided that ring B contains other than a O-O bond;

30



ring C forms a spiro ring on Ring B and is a 4-10  
 membered carbocycle substituted with 0-3 R<sup>e</sup> or a 4-  
 10 membered heterocycle comprising: carbon atoms,  
 0-3 carbonyl groups, 0-4 double bonds, and from 0-4  
 5 ring heteroatoms selected from O, N, NR<sup>2</sup>, and S(O)<sub>p</sub>  
 and substituted with 0-3 R<sup>e</sup>, provided that ring C  
 contains other than a S-S, O-O, or S-O bond;

Z is absent or selected from a C<sub>3-11</sub> carbocycle  
 10 substituted with 0-4 R<sup>b</sup> and a 5-11 membered  
 heterocycle comprising: carbon atoms and 1-4  
 heteroatoms selected from the group consisting of N,  
 O, and S(O)<sub>p</sub> and substituted with 0-3 R<sup>b</sup>;

15 U<sup>a</sup> is absent or is selected from: O, NR<sup>a1</sup>, C(O), C(O)O,  
 C(O)NR<sup>a1</sup>, NR<sup>a1</sup>C(O), S(O)<sub>p</sub>, and S(O)<sub>p</sub>NR<sup>a1</sup>;

X<sup>a</sup> is absent or selected from C<sub>1-4</sub> alkylene, C<sub>2-4</sub>  
 alkenylene, and C<sub>2-4</sub> alkynylene;

20

Y<sup>a</sup> is absent or selected from O and NR<sup>a1</sup>;

Z<sup>a</sup> is selected from H, a C<sub>3-10</sub> carbocycle substituted with  
 0-5 R<sup>c</sup> and a 5-10 membered heterocycle comprising:  
 25 carbon atoms and 1-4 heteroatoms selected from the  
 group consisting of N, O, and S(O)<sub>p</sub> and substituted  
 with 0-5 R<sup>c</sup>;

provided that Z, U<sup>a</sup>, Y<sup>a</sup>, and Z<sup>a</sup> do not combine to form a  
 30 N-N, N-O, O-N, O-O, S(O)<sub>p</sub>-O, O-S(O)<sub>p</sub> or S(O)<sub>p</sub>-S(O)<sub>p</sub>  
 group;

R<sup>1</sup> is selected from H, C<sub>1-4</sub> alkyl, phenyl, and benzyl;

$R^2$  is selected from Q,  $C_{1-6}$  alkylene-Q,  $C_{2-6}$  alkenylene-Q,  
 $C_{2-6}$  alkynylene-Q,  $(CR^aRa^1)_{r1}O(CR^aRa^1)_r-Q$ ,  
 $(CR^aRa^1)_{r1}NR^a(CR^aRa^1)_r-Q$ ,  $(CR^aRa^1)_{r1}C(O)(CR^aRa^1)_r-Q$ ,  
5  $(CR^aRa^1)_{r1}C(O)O(CR^aRa^1)_r-Q$ ,  $(CR^aRa^1)_rC(O)NR^aRa^1$ ,  
 $(CR^aRa^1)_{r1}C(O)NR^a(CR^aRa^1)_r-Q$ ,  
 $(CR^aRa^1)_{r1}S(O)_p(CR^aRa^1)_r-Q$ , and  
 $(CR^aRa^1)_{r1}SO_2NR^a(CR^aRa^1)_r-Q$ ;

10 Q is selected from H, a  $C_{3-6}$  carbocycle substituted with  
 0-5  $R^d$ , and a 5-10 membered heterocycle comprising:  
 carbon atoms and 1-4 heteroatoms selected from the  
 group consisting of N, O, and  $S(O)_p$  and substituted  
 with 0-5  $R^d$ ;

15

$R^a$ , at each occurrence, is independently selected from H,  
 $C_{1-4}$  alkyl, phenyl and benzyl;

20

$R^{a1}$ , at each occurrence, is independently selected from H  
 and  $C_{1-4}$  alkyl;

25

alternatively,  $R^a$  and  $R^{a1}$  when attached to a nitrogen are  
 taken together with the nitrogen to which they are  
 attached to form a 5 or 6 membered ring comprising  
 carbon atoms and from 0-1 additional heteroatoms  
 selected from the group consisting of N, O, and  
 $S(O)_p$ ;

30

$R^{a2}$ , at each occurrence, is independently selected from  
 $C_{1-4}$  alkyl, phenyl and benzyl;

$R^b$ , at each occurrence, is independently selected from  
 $C_{1-6}$  alkyl,  $OR^a$ , Cl, F, Br, =O, -CN,  $NR^aR^{a1}$ ,  $C(O)R^a$ ,  
 $C(O)OR^a$ ,  $C(O)NR^aR^{a1}$ ,  $S(O)_2NR^aR^{a1}$ ,  $S(O)_pR^{a2}$ , and  $CF_3$ ;

5  $R^c$ , at each occurrence, is independently selected from  
 $C_{1-6}$  alkyl,  $OR^a$ , Cl, F, Br, =O, -CN,  $NR^aR^{a1}$ ,  $C(O)R^a$ ,  
 $C(O)OR^a$ ,  $C(O)NR^aR^{a1}$ ,  $S(O)_2NR^aR^{a1}$ ,  $S(O)_pR^{a2}$ ,  $CF_3$ ,  $CH_2F$ ,  
 $CHF_2$ ,  $CF_2CH_3$ ,  $C(CH_3)_2F$ ,  $OCF_3$ ,  $C_{3-6}$  carbocycle  
substituted with 0-2  $R^{c1}$  and a 5-6 membered  
10 heterocycle comprising: carbon atoms and 1-4  
heteroatoms selected from the group consisting of N,  
O, and  $S(O)_p$  and substituted with 0-2  $R^{c1}$ ;

alternatively, when two  $R^c$  groups are attached to adjacent  
15 carbon atoms, together with the carbon atoms to  
which they are attached they form a 5-6 membered  
saturated, partially saturated or unsaturated ring  
consisting of: carbon atoms and 0-2 heteroatoms  
selected from the group consisting of N, O, and  
20  $S(O)_p$ ;

$R^{c1}$ , at each occurrence, is independently selected from  
 $C_{1-6}$  alkyl,  $OR^a$ , Cl, F, Br, I, =O, -CN,  $NO_2$ ,  $NR^aR^{a1}$ ,  
 $C(O)R^a$ ,  $C(O)OR^a$ ,  $C(O)NR^aR^{a1}$ ,  $R^{a1}NC(O)NR^aR^{a1}$ ,  
25  $OC(O)NR^aR^{a1}$ ,  $R^{a1}NC(O)OR^a$ ,  $S(O)_2NR^aR^{a1}$ ,  $NR^aS(O)_2R^{a2}$ ,  
 $NR^aS(O)_2NR^aR^{a1}$ ,  $OS(O)_2NR^aR^{a1}$ ,  $NR^aS(O)_2R^{a2}$ ,  $S(O)_pR^{a2}$ ,  
 $CF_3$ ,  $CF_2CF_3$ ,  $CH_2F$ , and  $CHF_2$ ;

$R^d$ , at each occurrence, is independently selected from  
30  $C_{1-6}$  alkyl,  $OR^a$ , Cl, F, Br, =O, -CN,  $NR^aR^{a1}$ ,  $C(O)R^a$ ,  
 $C(O)OR^a$ ,  $C(O)NR^aR^{a1}$ ,  $S(O)_2NR^aR^{a1}$ ,  $S(O)_pR^{a2}$ ,  $CF_3$ ,  $C_{3-6}$   
carbocycle and a 5-6 membered heterocycle  
comprising: carbon atoms and 1-4 heteroatoms

selected from the group consisting of N, O, and S(O)<sub>p</sub>;

5 R<sup>e</sup>, at each occurrence, is independently selected from C<sub>1-6</sub> alkyl, OR<sup>a</sup>, Cl, F, Br, I, =O, -CN, NO<sub>2</sub>, NR<sup>a</sup>R<sup>a1</sup>, C(O)R<sup>a</sup>, C(O)OR<sup>a</sup>, C(O)NR<sup>a</sup>R<sup>a1</sup>, R<sup>a</sup>NC(O)NR<sup>a</sup>R<sup>a1</sup>, OC(O)NR<sup>a</sup>R<sup>a1</sup>, R<sup>a</sup>NC(O)OR<sup>a</sup>, S(O)<sub>2</sub>NR<sup>a</sup>R<sup>a1</sup>, NR<sup>a</sup>S(O)<sub>2</sub>R<sup>a2</sup>, NR<sup>a</sup>S(O)<sub>2</sub>NR<sup>a</sup>R<sup>a1</sup>, OS(O)<sub>2</sub>NR<sup>a</sup>R<sup>a1</sup>, NR<sup>a</sup>S(O)<sub>2</sub>R<sup>a2</sup>, S(O)<sub>p</sub>R<sup>a2</sup>, CF<sub>3</sub>, CF<sub>2</sub>CF<sub>3</sub>, C<sub>3-10</sub> carbocycle substituted with 0-2 R<sup>c1</sup>, (CR<sup>a</sup>R<sup>a1</sup>)<sub>r1</sub>-C<sub>3-10</sub> carbocycle substituted with 0-2 R<sup>c1</sup>, a 5-14 membered heterocycle comprising carbon atoms and 1-4 heteroatoms selected from the group consisting of N, O, and S(O)<sub>p</sub> and substituted with 0-2 R<sup>c1</sup>, and (CR<sup>a</sup>R<sup>a1</sup>)<sub>r1</sub>-5-14 membered heterocycle comprising carbon atoms and 1-4 heteroatoms selected from the group consisting of N, O, and S(O)<sub>p</sub> and substituted with 0-2 R<sup>c1</sup>;

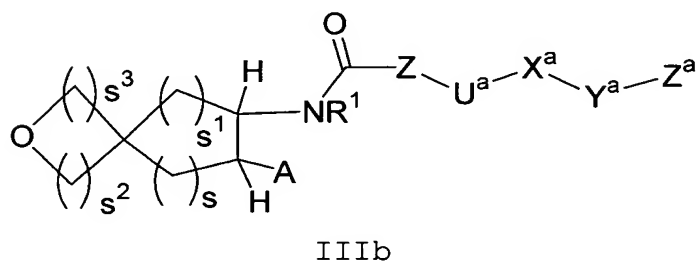
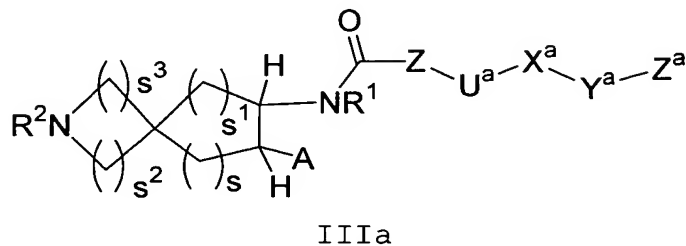
20 R<sup>5</sup>, at each occurrence, is selected from C<sub>1-6</sub> alkyl substituted with 0-2 R<sup>b</sup>, and C<sub>1-4</sub> alkyl substituted with 0-2 R<sup>f</sup>;

25 R<sup>f</sup>, at each occurrence, is selected from phenyl substituted with 0-2 R<sup>b</sup> and biphenyl substituted with 0-2 R<sup>b</sup>;

30 R<sup>6</sup>, at each occurrence, is selected from phenyl, naphthyl, C<sub>1-10</sub> alkyl-phenyl-C<sub>1-6</sub> alkyl-, C<sub>3-11</sub> cycloalkyl, C<sub>1-6</sub> alkylcarbonyloxy-C<sub>1-3</sub> alkyl-, C<sub>1-6</sub> alkoxycarbonyloxy-C<sub>1-3</sub> alkyl-, C<sub>2-10</sub> alkoxycarbonyl, C<sub>3-6</sub> cycloalkylcarbonyloxy-C<sub>1-3</sub> alkyl-, C<sub>3-6</sub> cycloalkoxycarbonyloxy-C<sub>1-3</sub> alkyl-, C<sub>3-6</sub> cycloalkoxycarbonyl, phenoxycarbonyl,

- phenyloxycarbonyloxy-C<sub>1-3</sub> alkyl-,  
 phenylcarbonyloxy-C<sub>1-3</sub> alkyl-, C<sub>1-6</sub> alkoxy-C<sub>1-6</sub>  
 alkylcarbonyloxy-C<sub>1-3</sub> alkyl-, [5-(C<sub>1-5</sub>  
 alkyl)-1,3-dioxo-cyclopenten-2-one-yl]methyl,  
 5 [5-(R<sup>a</sup>)-1,3-dioxo-cyclopenten-2-one-yl]methyl,  
 (5-aryl-1,3-dioxo-cyclopenten-2-one-yl)methyl,  
 -C<sub>1-10</sub> alkyl-NR<sup>7</sup>R<sup>7a</sup>, -CH(R<sup>8</sup>)OC(=O)R<sup>9</sup>, and  
 -CH(R<sup>8</sup>)OC(=O)OR<sup>9</sup>;
- 10 R<sup>7</sup> is selected from H and C<sub>1-6</sub> alkyl, C<sub>2-6</sub> alkenyl, C<sub>3-6</sub>  
 cycloalkyl-C<sub>1-3</sub> alkyl-, and phenyl-C<sub>1-6</sub> alkyl-;
- R<sup>7a</sup> is selected from H and C<sub>1-6</sub> alkyl, C<sub>2-6</sub> alkenyl, C<sub>3-6</sub>  
 cycloalkyl-C<sub>1-3</sub> alkyl-, and phenyl-C<sub>1-6</sub> alkyl-;
- 15 R<sup>8</sup> is selected from H and C<sub>1-4</sub> linear alkyl;
- R<sup>9</sup> is selected from H, C<sub>1-6</sub> alkyl substituted with 1-2 R<sup>9</sup>,  
 C<sub>3-6</sub> cycloalkyl substituted with 1-2 R<sup>9</sup>, and phenyl  
 20 substituted with 0-2 R<sup>b</sup>;
- R<sup>9</sup>, at each occurrence, is selected from C<sub>1-4</sub> alkyl, C<sub>3-6</sub>  
 cycloalkyl, C<sub>1-5</sub> alkoxy, and phenyl substituted with  
 0-2 R<sup>b</sup>;
- 25 p, at each occurrence, is selected from 0, 1, and 2;
- r, at each occurrence, is selected from 0, 1, 2, 3, and  
 4; and,
- 30 r<sub>1</sub>, at each occurrence, is selected from 0, 1, 2, 3, and  
 4.

3. A compound according to Claim 2, wherein the compound is of formula IIIa or IIIb:



or a stereoisomer or pharmaceutically acceptable salt form thereof, wherein;

A is selected from  $-\text{CO}_2\text{H}$ ,  $\text{CH}_2\text{CO}_2\text{H}$ ,  $-\text{CONHOH}$ ,  $-\text{CONHOR}^5$ ,  
 15  $-\text{N}(\text{OH})\text{CHO}$ , and  $-\text{N}(\text{OH})\text{COR}^5$ ;

Z is absent or selected from a  $\text{C}_{5-6}$  carbocycle substituted with 0-3  $\text{R}^b$  and a 5-6 membered heteroaryl comprising carbon atoms and from 1-4 heteroatoms selected from the group consisting of N, O, and  $\text{S}(\text{O})_p$  and substituted with 0-3  $\text{R}^b$ ;

20

$\text{U}^a$  is absent or is selected from: O,  $\text{NR}^{a1}$ ,  $\text{C}(\text{O})$ ,  $\text{C}(\text{O})\text{NR}^{a1}$ ,  $\text{S}(\text{O})_p$ , and  $\text{S}(\text{O})_p\text{NR}^{a1}$ ;

25

$\text{X}^a$  is absent or selected from  $\text{C}_{1-4}$  alkylene,  $\text{C}_{2-4}$  alkenylene, and  $\text{C}_{2-4}$  alkynylene

Y<sup>a</sup> is absent or selected from O and NR<sup>a1</sup>;

5        Z<sup>a</sup> is selected from H, a C<sub>5-10</sub> carbocycle substituted with  
          0-3 R<sup>c</sup> and a 5-10 membered heterocycle comprising  
          carbon atoms and from 1-4 heteroatoms selected from  
          the group consisting of N, O, and S(O)<sub>p</sub> and  
          substituted with 0-3 R<sup>c</sup>;

10      provided that Z, U<sup>a</sup>, Y<sup>a</sup>, and Z<sup>a</sup> do not combine to form a  
          N-N, N-O, O-N, O-O, S(O)<sub>p</sub>-O, O-S(O)<sub>p</sub> or S(O)<sub>p</sub>-S(O)<sub>p</sub>  
          group;

15      R<sup>1</sup> is selected from H, C<sub>1-4</sub> alkyl, phenyl, and benzyl;

         R<sup>2</sup> is selected from Q, C<sub>1-6</sub> alkylene-Q, C<sub>2-6</sub> alkenylene-Q,  
          C<sub>2-6</sub> alkynylene-Q, (CR<sup>a</sup>R<sup>a1</sup>)<sub>r1</sub>C(O)(CR<sup>a</sup>R<sup>a1</sup>)<sub>r</sub>-Q,  
          (CR<sup>a</sup>R<sup>a1</sup>)<sub>r1</sub>C(O)O(CR<sup>a</sup>R<sup>a1</sup>)<sub>r</sub>-Q, (CR<sup>a</sup>R<sup>a2</sup>)<sub>r1</sub>C(O)NR<sup>a</sup>R<sup>a1</sup>,  
          (CR<sup>a</sup>R<sup>a2</sup>)<sub>r1</sub>C(O)NR<sup>a</sup>(CR<sup>a</sup>R<sup>a1</sup>)<sub>r</sub>-Q, and  
 20      (CR<sup>a</sup>R<sup>a1</sup>)<sub>r1</sub>S(O)<sub>p</sub>(CR<sup>a</sup>R<sup>a1</sup>)<sub>r</sub>-Q;

         Q is selected from H, a C<sub>3-6</sub> carbocycle substituted with  
          0-3 R<sup>d</sup> and a 5-10 membered heterocycle comprising:  
          carbon atoms and 1-4 heteroatoms selected from the  
 25      group consisting of N, O, and S(O)<sub>p</sub> and substituted  
          with 0-3 R<sup>d</sup>;

         R<sup>a</sup>, at each occurrence, is independently selected from H,  
          C<sub>1-4</sub> alkyl, phenyl and benzyl;

30      R<sup>a1</sup>, at each occurrence, is independently selected from H  
          and C<sub>1-4</sub> alkyl;

$R^{a2}$ , at each occurrence, is independently selected from  
 $C_{1-4}$  alkyl, phenyl, and benzyl;

5  $R^b$ , at each occurrence, is independently selected from  
 $C_{1-4}$  alkyl,  $OR^a$ , Cl, F, =O,  $NR^aR^{a1}$ ,  $C(O)R^a$ ,  $C(O)OR^a$ ,  
 $C(O)NR^aR^{a1}$ ,  $S(O)_2NR^aR^{a1}$ ,  $S(O)_pR^{a2}$ , and  $CF_3$ ;

10  $R^c$ , at each occurrence, is independently selected from  
 $C_{1-6}$  alkyl,  $OR^a$ , Cl, F, Br, =O,  $NR^aR^{a1}$ ,  $C(O)R^a$ ,  
 $C(O)NR^aR^{a1}$ ,  $S(O)_2NR^aR^{a1}$ ,  $S(O)_pR^{a2}$ ,  $CF_3$ ,  $CH_2F$ ,  $CHF_2$ ,  
 $CF_2CH_3$ ,  $C(CH_3)_2F$ , cyclopropyl, 1-methylcyclopropyl,  
and cyclobutyl;

15 alternatively, when two  $R^c$  groups are attached to adjacent  
carbon atoms, together with the carbon atoms to  
which they are attached they form a 5-6 membered  
saturated ring consisting of: carbon atoms and 0-2  
heteroatoms selected from the group consisting of N,  
O, and  $S(O)_p$ ;

20  $R^d$ , at each occurrence, is independently selected from  
 $C_{1-6}$  alkyl,  $OR^a$ , Cl, F, Br, =O,  $NR^aR^{a1}$ ,  $C(O)R^a$ ,  
 $C(O)NR^aR^{a1}$ ,  $S(O)_2NR^aR^{a1}$ ,  $S(O)_pR^{a2}$ ,  $CF_3$ , and phenyl;

25  $R^e$ , at each occurrence, is independently selected from  
 $C_{1-6}$  alkyl,  $OR^a$ , Cl, F, Br, I, =O, -CN,  $NO_2$ ,  $NR^aR^{a1}$ ,  
 $C(O)R^a$ ,  $C(O)OR^a$ ,  $C(O)NR^aR^{a1}$ ,  $R^aNC(O)NR^aR^{a1}$ ,  
 $OC(O)NR^aR^{a1}$ ,  $R^aNC(O)OR^a$ ,  $S(O)_2NR^aR^{a1}$ ,  $NR^aS(O)_2R^{a2}$ ,  
 $NR^aS(O)_2NR^aR^{a1}$ ,  $OS(O)_2NR^aR^{a1}$ ,  $NR^aS(O)_2R^{a2}$ ,  $S(O)_pR^{a2}$ ,  
30  $CF_3$ ,  $CF_2CF_3$ ,  $C_{3-10}$  carbocycle substituted with 0-2  
 $R^{c1}$ ,  $(CR^aR^{a1})_{r1}-C_{3-10}$  carbocycle substituted with 0-2  
 $R^{c1}$ , a 5-14 membered heterocycle comprising carbon  
atoms and 1-4 heteroatoms selected from the group



consisting of N, O, and S(O)<sub>p</sub> and substituted with  
0-2 R<sup>c1</sup>, and (CR<sup>a</sup>R<sup>a1</sup>)<sub>r1</sub>-5-14 membered heterocycle  
comprising carbon atoms and 1-4 heteroatoms selected  
from the group consisting of N, O, and S(O)<sub>p</sub> and  
5 substituted with 0-2 R<sup>c1</sup>;

R<sup>5</sup>, at each occurrence, is selected from C<sub>1-4</sub> alkyl  
substituted with 0-2 R<sup>b</sup>, and C<sub>1-4</sub> alkyl substituted  
with 0-2 R<sup>f</sup>;

10 R<sup>f</sup>, at each occurrence, is selected from phenyl  
substituted with 0-2 R<sup>b</sup> and biphenyl substituted  
with 0-2 R<sup>b</sup>;

15 p, at each occurrence, is selected from 0, 1, and 2;

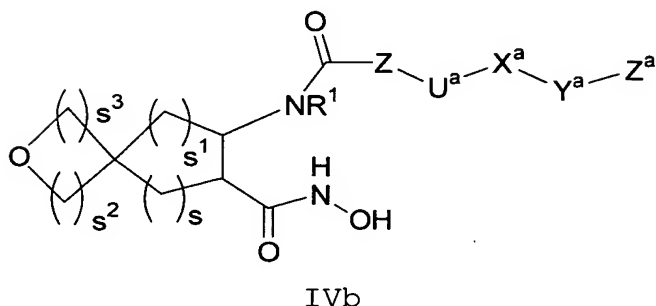
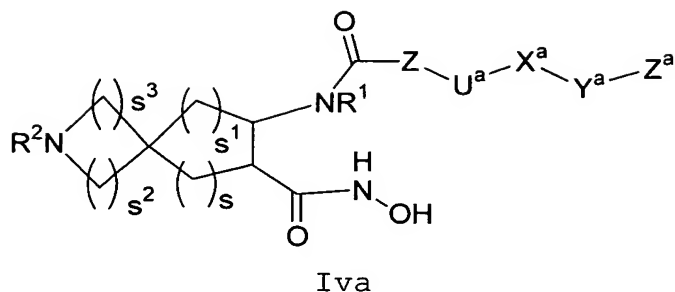
r, at each occurrence, is selected from 0, 1, 2, 3, and  
4;

20 r<sub>1</sub>, at each occurrence, is selected from 0, 1, 2, 3, and  
4;

s and s<sup>1</sup> combine to total 2, 3, or 4; and

25 s<sup>2</sup> and s<sup>3</sup> combine to total 2, 3, 4, or 5.

4. A compound according to Claim 3, wherein the  
30 compound is of formula IVa or IVb:



5

or a stereoisomer or pharmaceutically acceptable salt  
form thereof, wherein;

10 Z is absent or selected from phenyl substituted with 0-3  
R<sup>b</sup>, pyridyl substituted with 0-3 R<sup>b</sup>, thiazolyl  
substituted with 0-3 R<sup>b</sup>, thienyl substituted with  
0-3 R<sup>b</sup>, and isoxazolyl substituted with 0-3 R<sup>b</sup>;

15 U<sup>a</sup> is absent or is O;

X<sup>a</sup> is absent or is CH<sub>2</sub> or CH<sub>2</sub>CH<sub>2</sub>;

Y<sup>a</sup> is absent or is O;

20

Z<sup>a</sup> is selected from H, phenyl substituted with 0-3 R<sup>c</sup>, and  
a 5-10 membered heterocycle substituted with 0-3 R<sup>c</sup>  
and selected from the group: pyridyl, quinolinyl,  
imidazolyl, benzimidazolyl, indolyl, 1,1-dioxido-  
2,3-dihydro-4H-1,4-benzothiazin-4-yl, 1,1-dioxido-

25

3,4-dihydro-2*H*-1-benzothiopyran-4-yl, 3,4-dihydro-2*H*-chromen-4-yl, 2*H*-chromen-4-yl, and pyrazolyl;

provided that Z, U<sup>a</sup>, Y<sup>a</sup>, and Z<sup>a</sup> do not combine to form a  
5 N-N, N-O, O-N, or O-O group;

R<sup>1</sup> is selected from H, CH<sub>3</sub>, and CH<sub>2</sub>CH<sub>3</sub>;

R<sup>2</sup> is selected from Q, C<sub>1-6</sub> alkylene-Q, C<sub>2-6</sub> alkynylene-Q,  
10 C(O)(CR<sup>a</sup>R<sup>a1</sup>)<sub>r</sub>-Q, C(O)O(CR<sup>a</sup>R<sup>a1</sup>)<sub>r</sub>-Q, C(O)NR<sup>a</sup>(CR<sup>a</sup>R<sup>a1</sup>)<sub>r</sub>-Q,  
and S(O)<sub>p</sub>(CR<sup>a</sup>R<sup>a1</sup>)<sub>r</sub>-Q;

Q is selected from H, cyclopropyl substituted with 0-1  
R<sup>d</sup>, cyclobutyl substituted with 0-1 R<sup>d</sup>, cyclopentyl  
15 substituted with 0-1 R<sup>d</sup>, cyclohexyl substituted with  
0-1 R<sup>d</sup>, phenyl substituted with 0-2 R<sup>d</sup> and a  
heteroaryl substituted with 0-3 R<sup>d</sup>, wherein the  
heteroaryl is selected from pyridyl, quinolinyl,  
thiazolyl, furanyl, imidazolyl, and isoxazolyl;

20

R<sup>a</sup>, at each occurrence, is independently selected from H,  
CH<sub>3</sub>, and CH<sub>2</sub>CH<sub>3</sub>;

R<sup>a1</sup>, at each occurrence, is independently selected from H,  
25 CH<sub>3</sub>, and CH<sub>2</sub>CH<sub>3</sub>;

R<sup>a2</sup>, at each occurrence, is independently selected from H,  
CH<sub>3</sub>, and CH<sub>2</sub>CH<sub>3</sub>;

30 R<sup>b</sup>, at each occurrence, is independently selected from  
C<sub>1-4</sub> alkyl, OR<sup>a</sup>, Cl, F, =O, NR<sup>a</sup>R<sup>a1</sup>, C(O)R<sup>a</sup>, C(O)OR<sup>a</sup>,  
C(O)NR<sup>a</sup>R<sup>a1</sup>, S(O)<sub>2</sub>NR<sup>a</sup>R<sup>a1</sup>, S(O)<sub>p</sub>R<sup>a2</sup>, and CF<sub>3</sub>;

$R^c$ , at each occurrence, is independently selected from  
 $C_{1-6}$  alkyl,  $OR^a$ , Cl, F, Br, =O,  $NR^aR^{a1}$ ,  $C(O)R^a$ ,  
 $C(O)NR^aR^{a1}$ ,  $S(O)_2NR^aR^{a1}$ ,  $S(O)_pR^{a2}$ ,  $CF_3$ ,  $CH_2F$ ,  $CHF_2$ ,  
 $CF_2CH_3$ ,  $C(CH_3)_2F$ , cyclopropyl, 1-methylcyclopropyl,  
 5 and cyclobutyl;

alternatively, when two  $R^c$  groups are attached to adjacent  
 carbon atoms, together with the carbon atoms to  
 which they are attached they form a 5-6 membered  
 10 saturated ring consisting of: carbon atoms and 0-1  
 heteroatoms selected from the group consisting of N,  
 O, and  $S(O)_p$ ;

$R^d$ , at each occurrence, is independently selected from  
 15  $C_{1-6}$  alkyl,  $OR^a$ , Cl, F, Br, =O,  $NR^aR^{a1}$ ,  $C(O)R^a$ ,  
 $C(O)NR^aR^{a1}$ ,  $S(O)_2NR^aR^{a1}$ ,  $S(O)_pR^{a2}$ ,  $CF_3$  and phenyl;

$R^e$ , at each occurrence, is independently selected from  
 $C_{1-6}$  alkyl,  $OR^a$ , Cl, F, Br, I, =O, -CN,  $NO_2$ ,  $NR^aR^{a1}$ ,  
 20  $C(O)R^a$ ,  $C(O)OR^a$ ,  $C(O)NR^aR^{a1}$ ,  $R^aNC(O)NR^aR^{a1}$ ,  
 $OC(O)NR^aR^{a1}$ ,  $R^aNC(O)OR^a$ ,  $S(O)_2NR^aR^{a1}$ ,  $NR^aS(O)_2R^{a2}$ ,  
 $NR^aS(O)_2NR^aR^{a1}$ ,  $OS(O)_2NR^aR^{a1}$ ,  $NR^aS(O)_2R^{a2}$ ,  $S(O)_pR^{a2}$ ,  
 $CF_3$ ,  $CF_2CF_3$ ,  $C_{3-10}$  carbocycle substituted with 0-2  
 $R^{c1}$ ,  $(CR^aR^{a1})_{r1-C_{3-10}}$  carbocycle substituted with 0-2  
 25  $R^{c1}$ , a 5-14 membered heterocycle comprising carbon  
 atoms and 1-4 heteroatoms selected from the group  
 consisting of N, O, and  $S(O)_p$  and substituted with  
 0-2  $R^{c1}$ , and  $(CR^aR^{a1})_{r1-5-14}$  membered heterocycle  
 comprising carbon atoms and 1-4 heteroatoms selected  
 30 from the group consisting of N, O, and  $S(O)_p$  and  
 substituted with 0-2  $R^{c1}$ ;

$p$ , at each occurrence, is selected from 0, 1, and 2;

r, at each occurrence, is selected from 0, 1, 2, and 3;

r<sup>1</sup>, at each occurrence, is selected from 0, 1, 2, and 3;

5

s and s<sup>1</sup> combine to total 2, 3, or 4; and

s<sup>2</sup> and s<sup>3</sup> combine to total 2, 3, 4, or 5.

10

5. A compound according to Claim 4, wherein the compound is of formula IVa or IVb, wherein;

15 Z is absent or selected from phenyl substituted with 0-3 R<sup>b</sup> and pyridyl substituted with 0-3 R<sup>b</sup>;

U<sup>a</sup> is absent or is O;

20 X<sup>a</sup> is absent or is CH<sub>2</sub> or CH<sub>2</sub>CH<sub>2</sub>;

Y<sup>a</sup> is absent or is O;

25 Z<sup>a</sup> is selected from H, phenyl substituted with 0-3 R<sup>c</sup>, pyridyl substituted with 0-3 R<sup>c</sup>, and quinolinyl substituted with 0-3 R<sup>c</sup>;

provided that Z, U<sup>a</sup>, Y<sup>a</sup>, and Z<sup>a</sup> do not combine to form a N-N, N-O, O-N, or O-O group;

30

R<sup>1</sup> is selected from H, CH<sub>3</sub>, and CH<sub>2</sub>CH<sub>3</sub>;

$R^2$  is selected from Q,  $C_{1-6}$  alkylene-Q,  $C_{2-6}$  alkynylene-Q,  $C(O)(CR^aRa^1)_r-Q$ ,  $C(O)O(CR^aRa^1)_r-Q$ ,  $C(O)NR^a(CR^aRa^1)_r-Q$ , and  $S(O)_p(CR^aRa^1)_r-Q$ ;

5 Q is selected from H, cyclopropyl substituted with 0-1  $R^d$ , cyclobutyl substituted with 0-1  $R^d$ , cyclopentyl substituted with 0-1  $R^d$ , cyclohexyl substituted with 0-1  $R^d$ , phenyl substituted with 0-2  $R^d$  and a  
 10 heteroaryl substituted with 0-3  $R^d$ , wherein the heteroaryl is selected from pyridyl, quinolinyl, thiazolyl, furanyl, imidazolyl, and isoxazolyl;

$R^a$ , at each occurrence, is independently selected from H,  $CH_3$ , and  $CH_2CH_3$ ;

15  $R^{a1}$ , at each occurrence, is independently selected from H,  $CH_3$ , and  $CH_2CH_3$ ;

20  $R^{a2}$ , at each occurrence, is independently selected from H,  $CH_3$ , and  $CH_2CH_3$ ;

$R^b$ , at each occurrence, is independently selected from  $C_{1-4}$  alkyl,  $OR^a$ , Cl, F, =O,  $NR^aRa^1$ ,  $C(O)R^a$ ,  $C(O)OR^a$ ,  $C(O)NR^aRa^1$ ,  $S(O)_2NR^aRa^1$ ,  $S(O)_pRa^2$ , and  $CF_3$ ;

25  $R^c$ , at each occurrence, is independently selected from  $C_{1-6}$  alkyl,  $OR^a$ , Cl, F, Br, =O,  $NR^aRa^1$ ,  $C(O)R^a$ ,  $C(O)NR^aRa^1$ ,  $S(O)_2NR^aRa^1$ ,  $S(O)_pRa^2$ , and  $CF_3$ ;

30  $R^d$ , at each occurrence, is independently selected from  $C_{1-6}$  alkyl,  $OR^a$ , Cl, F, Br, =O,  $NR^aRa^1$ ,  $C(O)R^a$ ,  $C(O)NR^aRa^1$ ,  $S(O)_2NR^aRa^1$ ,  $S(O)_pRa^2$ ,  $CF_3$  and phenyl;

$R^e$ , at each occurrence, is independently selected from  
 $C_{1-6}$  alkyl,  $OR^a$ , Cl, F, Br, I, =O, -CN,  $NO_2$ ,  $NR^aR^{a1}$ ,  
 $C(O)R^a$ ,  $C(O)OR^a$ ,  $C(O)NR^aR^{a1}$ ,  $R^aNC(O)NR^aR^{a1}$ ,  
 $OC(O)NR^aR^{a1}$ ,  $R^aNC(O)OR^a$ ,  $S(O)_2NR^aR^{a1}$ ,  $NR^aS(O)_2R^{a2}$ ,  
 $NR^aS(O)_2NR^aR^{a1}$ ,  $OS(O)_2NR^aR^{a1}$ ,  $NR^aS(O)_2R^{a2}$ ,  $S(O)_pR^{a2}$ ,  
 $CF_3$ ,  $CF_2CF_3$ ,  $C_{3-10}$  carbocycle substituted with 0-2  
 $R^{c1}$ ,  $(CR^aR^{a1})_{r1-C_{3-10}}$  carbocycle substituted with 0-2  
 $R^{c1}$ , a 5-14 membered heterocycle comprising carbon  
atoms and 1-4 heteroatoms selected from the group  
consisting of N, O, and  $S(O)_p$  and substituted with  
0-2  $R^{c1}$ , and  $(CR^aR^{a1})_{r1-5-14}$  membered heterocycle  
comprising carbon atoms and 1-4 heteroatoms selected  
from the group consisting of N, O, and  $S(O)_p$  and  
substituted with 0-2  $R^{c1}$ ;

15

$p$ , at each occurrence, is selected from 0, 1, and 2;

$r$ , at each occurrence, is selected from 0, 1, 2, and 3;

20  $r_1$ , at each occurrence, is selected from 0, 1, 2, and 3;

$s$  and  $s^1$  combine to total 2, 3, or 4; and

$s^2$  and  $s^3$  combine to total 2, 3, 4, or 5.

25

6. A compound according to Claim 4, wherein the  
compound is of formula IVa or IVb, wherein;

30

$Z$  is phenyl, thiazolyl, thienyl or isoxazolyl;

$U^a$  is absent or is O;

X<sup>a</sup> is absent or is CH<sub>2</sub> or CH<sub>2</sub>CH<sub>2</sub>;

Y<sup>a</sup> is absent or is O;

5

Z<sup>a</sup> is a 5-10 membered heterocycle substituted with 0-2 R<sup>c</sup>  
and selected from the group: 4-pyridyl, 4-  
quinolinyl, 1*H*-benzimidazol-1-yl, 1*H*-indol-1-yl, and  
1*H*-indol-3-yl, 1,1-dioxido-2,3-dihydro-4*H*-1,4-  
10 benzothiazin-4-yl;

R<sup>1</sup> is H;

15 R<sup>c</sup>, at each occurrence, is independently selected from  
methyl, ethyl, propyl, isopropyl, butyl, t-butyl,  
CF<sub>3</sub>,  
CHF<sub>2</sub>, CH<sub>2</sub>F, CF<sub>2</sub>CH<sub>3</sub>, C(CH<sub>3</sub>)<sub>2</sub>F, NH<sub>2</sub>, NH(CH<sub>3</sub>), N(CH<sub>3</sub>)<sub>2</sub>,  
cyclopropyl, 1-methylcyclopropyl, and cyclobutyl;

20 s and s<sup>1</sup> combine to total 2, 3, or 4; and

s<sup>2</sup> and s<sup>3</sup> combine to total 2, 3, 4, or 5.

25

7. A compound according to Claim 1, wherein the  
compound is selected from the group:

30 (7*S*, 8*R*)-*N*-hydroxy-8-({4-[(2-methyl-4-  
quinolinyl)methoxy]benzoyl}amino)-1,4-  
dioxaspiro[4.4]nonane-7-carboxamide;



- (5*R*, 7*S*, 8*R*)-*N*-hydroxy-8-({4-[(2-methyl-4-quinolinyl)methoxy]benzoyl}amino)-1-oxaspiro[4.4]nonane-7-carboxamide;
- 5 (5*S*, 7*S*, 8*R*)-*N*-hydroxy-8-({4-[(2-methyl-4-quinolinyl)methoxy]benzoyl}amino)-1-oxaspiro[4.4]nonane-7-carboxamide;
- 10 (2*S*, 3*R*)-*N*-hydroxy-3-({4-[(2-methyl-4-quinolinyl)methoxy]benzoyl}amino)-6,10-dioxaspiro[4.5]decane-2-carboxamide;
- 15 (7*S*, 8*R*)-*N*-hydroxy-8-({4-[(2-methyl-4-quinolinyl)methoxy]benzoyl}amino)-1,4-dithiaspiro[4.4]nonane-7-carboxamide;
- (5*R*, 7*S*, 8*R*)-8-{[4-(2-butyloxy)benzoyl]amino}-*N*-hydroxy-1-oxaspiro[4.4]nonane-7-carboxamide;
- 20 (5*R*, 7*S*, 8*R*)-*N*-hydroxy-8-({4-[(2-methyl-1*H*-benzimidazol-1-yl)methyl]benzoyl}amino)-1-oxaspiro[4.4]nonane-7-carboxamide;
- 25 (5*R*, 7*S*, 8*R*)-*N*-hydroxy-8-({4-[(2-isopropyl-1*H*-benzimidazol-1-yl)methyl]benzoyl}amino)-1-oxaspiro[4.4]nonane-7-carboxamide;
- 30 (5*R*, 7*S*, 8*R*)-*N*-hydroxy-8-[(4-{[2-(trifluoromethyl)-1*H*-benzimidazol-1-yl]methyl}benzoyl)amino]-1-oxaspiro[4.4]nonane-7-carboxamide;
- 35 (5*R*, 7*S*, 8*R*)-8-({4-[(2-*tert*-butyl-1*H*-benzimidazol-1-yl)methyl]benzoyl}amino)-*N*-hydroxy-1-oxaspiro[4.4]nonane-7-carboxamide;

- (5*R*, 7*S*, 8*R*)-*N*-hydroxy-8-({4-[(2-methyl-1*H*-indol-3-yl)methyl]benzoyl}amino)-1-oxaspiro[4.4]nonane-7-carboxamide;
- 5 (5*R*, 7*S*, 8*R*)-8-[(4-{[2-(difluoromethyl)-1*H*-benzimidazol-1-yl)methyl]benzoyl}amino)-*N*-hydroxy-1-oxaspiro[4.4]nonane-7-carboxamide;
- 10 (5*R*, 7*S*, 8*R*)-8-({4-[(2-cyclopropyl-1*H*-benzimidazol-1-yl)methyl]benzoyl}amino)-*N*-hydroxy-1-oxaspiro[4.4]nonane-7-carboxamide;
- 15 (5*R*, 7*S*, 8*R*)-8-({4-[(2-cyclobutyl-1*H*-benzimidazol-1-yl)methyl]benzoyl}amino)-*N*-hydroxy-1-oxaspiro[4.4]nonane-7-carboxamide;
- 20 (5*R*, 7*S*, 8*R*)-*N*-hydroxy-8-({4-[(2-isopropyl-1*H*-imidazol-1-yl)methyl]benzoyl}amino)-1-oxaspiro[4.4]nonane-7-carboxamide;
- (5*R*, 7*S*, 8*R*)-*N*-hydroxy-8-({4-[(2-methyl-1*H*-indol-1-yl)methyl]benzoyl}amino)-1-oxaspiro[4.4]nonane-7-carboxamide;
- 25 (5*R*, 7*S*, 8*R*)-*N*-hydroxy-8-[(4-{[2-(1-methylcyclopropyl)-1*H*-benzimidazol-1-yl)methyl]benzoyl}amino)-1-oxaspiro[4.4]nonane-7-carboxamide;
- 30 (5*R*, 7*S*, 8*R*)-8-[(4-{[2-(fluoromethyl)-1*H*-benzimidazol-1-yl)methyl]benzoyl}amino)-*N*-hydroxy-1-oxaspiro[4.4]nonane-7-carboxamide;

(5*R*, 7*S*, 8*R*)-8-[(4-{[2-(1-fluoro-1-methylethyl)-1*H*-benzimidazol-1-yl]methyl}benzoyl)amino]-*N*-hydroxy-1-oxaspiro[4.4]nonane-7-carboxamide;

5 (5*R*, 7*S*, 8*R*)-*N*-hydroxy-8-{[4-(1*H*-indol-3-ylmethyl)benzoyl]amino}-1-oxaspiro[4.4]nonane-7-carboxamide;

10 (5*R*, 7*S*, 8*R*)-8-[(4-{[2-(1,1-difluoroethyl)-1*H*-benzimidazol-1-yl]methyl}benzoyl)amino]-*N*-hydroxy-1-oxaspiro[4.4]nonane-7-carboxamide;

15 (5*R*, 7*S*, 8*R*)-8-({4-[(2,3-dimethyl-1*H*-indol-1-yl)methyl]benzoyl}amino)-*N*-hydroxy-1-oxaspiro[4.4]nonane-7-carboxamide;

(5*R*, 7*S*, 8*R*)-8-({4-[(2-ethyl-1*H*-indol-3-yl)methyl]benzoyl}amino)-*N*-hydroxy-1-oxaspiro[4.4]nonane-7-carboxamide;

20

(5*R*, 7*S*, 8*R*)-*N*-hydroxy-8-[(4-{[2-(trifluoromethyl)-1*H*-indol-1-yl]methyl}benzoyl)amino]-1-oxaspiro[4.4]nonane-7-carboxamide;

25 (5*R*, 7*S*, 8*R*)-8-{[4-(1,1-dioxido-3,4-dihydro-2*H*-1-benzothiopyran-4-yl)benzoyl]amino}-*N*-hydroxy-1-oxaspiro[4.4]nonane-7-carboxamide;

30 (5*R*, 7*S*, 8*R*)-8-{[4-(3,4-dihydro-2*H*-chromen-4-yl)benzoyl]amino}-*N*-hydroxy-1-oxaspiro[4.4]nonane-7-carboxamide;

(5*R*, 7*S*, 8*R*)-8-{[4-(2*H*-chromen-4-yl)benzoyl]amino}-*N*-hydroxy-1-oxaspiro[4.4]nonane-7-carboxamide;

*N*-{(5*R*,7*R*,8*S*)-8-[(hydroxyamino)carbonyl]-1-oxaspiro[4.4]non-7-yl}-2-[(2-isopropyl-1*H*-benzimidazol-1-yl)methyl]-1,3-thiazole-4-carboxamide;

5

(5*R*,7*S*,8*R*)-8-({4-[(3,5-dimethyl-1*H*-pyrazol-4-yl)methyl]benzoyl}amino)-*N*-hydroxy-1-oxaspiro[4.4]nonane-7-carboxamide;

10

(5*R*,7*S*,8*R*)-*N*-hydroxy-8-({4-[(1,3,5-trimethyl-1*H*-pyrazol-4-yl)methyl]benzoyl}amino)-1-oxaspiro[4.4]nonane-7-carboxamide;

15

(5*R*,7*S*,8*R*)-8-({4-[(1,1-dioxido-2,3-dihydro-4*H*-1,4-benzothiazin-4-yl)methyl]benzoyl}amino)-*N*-hydroxy-1-oxaspiro[4.4]nonane-7-carboxamide;

20

(5*R*,7*S*,8*R*)-8-({4-[(2,2-dimethyl-1,1-dioxido-2,3-dihydro-4*H*-1,4-benzothiazin-4-yl)methyl]benzoyl}amino)-*N*-hydroxy-1-oxaspiro[4.4]nonane-7-carboxamide;

25

(5*R*,7*S*,8*R*)-*N*-hydroxy-8-({4-[(2-methyl-4-quinolinyl)methyl]benzoyl}amino)-1-oxaspiro[4.4]nonane-7-carboxamide;

30

(5*R*,7*S*,8*R*)-*N*-hydroxy-8-[(4-{[2-(trifluoromethyl)-4-quinolinyl]methyl}benzoyl)amino]-1-oxaspiro[4.4]nonane-7-carboxamide;

(5*R*,7*S*,8*R*)-8-({4-[(2-ethyl-4-quinolinyl)methyl]benzoyl}amino)-*N*-hydroxy-1-oxaspiro[4.4]nonane-7-carboxamide;

- (5*R*, 7*S*, 8*R*)-*N*-hydroxy-8-({4-[(2-isopropyl-4-quinolinyl)methyl]benzoyl}amino)-1-oxaspiro[4.4]nonane-7-carboxamide
- 5 (5*R*, 7*S*, 8*R*)-8-[(4-{[2-(dimethylamino)-4-quinolinyl]methyl}benzoyl)amino]-*N*-hydroxy-1-oxaspiro[4.4]nonane-7-carboxamide;
- 10 (5*R*, 7*S*, 8*R*)-8-({4-[(2-cyclopropyl-4-quinolinyl)methyl]benzoyl}amino)-*N*-hydroxy-1-oxaspiro[4.4]nonane-7-carboxamide;
- 15 (5*R*, 7*S*, 8*R*)-8-{[4-(1,3-dihydrofuro[3,4-*b*]quinolin-9-ylmethyl)benzoyl]amino}-*N*-hydroxy-1-oxaspiro[4.4]nonane-7-carboxamide;
- 20 (5*R*, 7*S*, 8*R*)-8-({4-[(2,3-dimethyl-4-quinolinyl)methyl]benzoyl}amino)-*N*-hydroxy-1-oxaspiro[4.4]nonane-7-carboxamide;
- 25 (5*R*, 7*S*, 8*R*)-*N*-hydroxy-8-[(4-{[2-methyl-8-(trifluoromethyl)-4-quinolinyl]methyl}benzoyl)amino]-1-oxaspiro[4.4]nonane-7-carboxamide;
- 30 (5*R*, 7*S*, 8*R*)-8-({4-[(2,6-dimethyl-4-quinolinyl)methyl]benzoyl}amino)-*N*-hydroxy-1-oxaspiro[4.4]nonane-7-carboxamide;

(5*R*, 7*S*, 8*R*)-8-({4-[(6-chloro-2-methyl-4-quinolinyl)methyl]benzoyl}amino)-*N*-hydroxy-1-oxaspiro[4.4]nonane-7-carboxamide;

5 (5*R*, 7*S*, 8*R*)-8-({4-[(6-fluoro-2-methyl-4-quinolinyl)methyl]benzoyl}amino)-*N*-hydroxy-1-oxaspiro[4.4]nonane-7-carboxamide;

(5*R*, 7*S*, 8*R*)-8-({4-[(7-chloro-2-methyl-4-quinolinyl)methyl]benzoyl}amino)-*N*-hydroxy-1-oxaspiro[4.4]nonane-7-carboxamide; and

10

(5*R*, 7*S*, 8*R*)-8-({4-[(2,6-dimethyl-4-pyridinyl)methyl]benzoyl}amino)-*N*-hydroxy-1-oxaspiro[4.4]nonane-7-carboxamide;

15

or a pharmaceutically acceptable salt form thereof.

20

8. A pharmaceutical composition, comprising: a pharmaceutically acceptable carrier and a therapeutically effective amount of a compound according to Claim 1 or a pharmaceutically acceptable salt form thereof.

25

9. A method of treating an inflammatory disorder, comprising: administering to a patient in need thereof a therapeutically effective amount of a compound according to Claim 1 or a pharmaceutically acceptable salt form thereof.

30

10. A method comprising: administering a compound according to Claim 1 or a pharmaceutically acceptable salt form thereof, in an amount effective to treat a condition or disease mediated by MMPs, TACE, aggrecanase,  
5 or a combination thereof.

11. A method of treating a condition or disease  
10 mediated by MMPs, TACE, aggrecanase, or a combination thereof in a mammal, comprising: administering to the mammal in need of such treatment a therapeutically effective amount of a compound according to Claim 1 or a pharmaceutically acceptable salt form thereof.

15

12. A method of treating according to Claim 11,  
wherein the disease or condition is referred to as acute  
20 infection, acute phase response, age related macular degeneration, alcoholism, allergy, allergic asthma, anorexia, aneurism, aortic aneurism, asthma,  
, atherosclerosis, atopic dermatitis, autoimmune disease, autoimmune hepatitis, Bechet's disease, cachexia, calcium  
25 pyrophosphate dihydrate deposition disease, cardiovascular effects, chronic fatigue syndrome, chronic obstruction pulmonary disease, coagulation, congestive heart failure, corneal ulceration, Crohn's disease, enteropathic arthropathy, Felty's syndrome, fever,  
30 fibromyalgia syndrome, fibrotic disease, gingivitis, glucocorticoid withdrawal syndrome, gout, graft versus host disease, hemorrhage, HIV infection, hyperoxic alveolar injury, infectious arthritis, inflammation, intermittent hydrarthrosis, Lyme disease, meningitis,  
35 multiple sclerosis, myasthenia gravis, mycobacterial

infection, neovascular glaucoma, osteoarthritis, pelvic inflammatory disease, periodontitis, polymyositis/dermatomyositis, post-ischaemic reperfusion injury, post-radiation asthenia, psoriasis, psoriatic  
5 arthritis, pulmonary emphysema, pyoderma gangrenosum, relapsing polychondritis, Reiter's syndrome, rheumatic fever, rheumatoid arthritis, sarcoidosis, scleroderma, sepsis syndrome, Still's disease, shock, Sjogren's syndrome, skin inflammatory diseases, solid tumor growth  
10 and tumor invasion by secondary metastases, spondylitis, stroke, systemic lupus erythematosus, ulcerative colitis, uveitis, vasculitis, and Wegener's granulomatosis.